

Cancel Claim 11.

13. (Twice amended) A process for stabilizing an artificial sintered composition of calcium phosphate phases having a morphology suitable for supporting bone cell activity, said process comprising substantially uniformly doping a hydroxyapatite substance with stabilizing entities and sintering said substantially uniformly doped hydroxyapatite substance; wherein sintering converts said substantially uniformly doped hydroxyapatite substance into primarily uniformly stabilized alpha tricalcium phosphate which is insoluble in physiological fluids and said stabilizing entities stabilize the formed alpha tricalcium phosphate within the phosphate phases.

19. (Amended) A process for stabilizing an artificial sintered composition of calcium phosphate phases having a morphology suitable for supporting bone cell activity thereon, said process comprising converting a hydroxyapatite substance into primarily uniformly stabilized alpha tricalcium phosphate by sintering, wherein silicon entities are provided in solution to the hydroxyapatite substance before sintering which uniformly stabilize the formed alpha tricalcium phosphate within the phosphate phases and wherein said uniformly stabilized alpha tricalcium phosphate is insoluble in physiological fluids.

24. (Amended) A sintered artificial microporous polycrystalline structure for supporting bone cell activity, said structure comprising sintered substantially uniformly stabilized calcium phosphate phases having a globular surface morphology of loosely interconnected rounded granules with interconnected micropores in said structure, wherein said substantially uniformly stabilized calcium phosphate phases are developed by the conversion of a hydroxyapatite substance substantially uniformly doped with stabilizing entities at sintering temperatures into stabilized tricalcium phosphate phases, wherein said substantially uniformly stabilized alpha tricalcium phosphate is insoluble in physiological fluids.

25. (Twice amended) A polycrystalline structure of claim 24, wherein said structure has said globular morphology of Figure 14.

27. (Amended) An implantable calcified bone matrix comprising:

- a) a structure for supporting said matrix;
- b) a layer of substantially uniformly stabilized calcium phosphate phases developed by the conversion of a hydroxyapatite substance substantially uniformly doped with stabilizing entities at sintering temperatures into substantially uniformly stabilized tricalcium phosphate where said stabilizing entities insolubilize and stabilize the calcium phosphate phases;
- c) a boundary layer deposited by osteoblasts cultured on said layer of stabilized calcium phosphate phases; and
- d) a mineralizing collagenous matrix secreted by such cultured osteoblasts.

Please add the following new claim:

38. A composition as claimed in claim 1, wherein said stabilizing entities are silicon entities.